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OUTLOOK NOTES

TEN years ago there would seem to have been but one question before our schoolmen, that of the curriculum. The word curriculum in those days connoted all there was so far as the arrangement of studies went. If "course of study" was used, it was only as a synonym for "curriculum;" the "program," if it had any special meaning at all, meant nothing more than time-table. The great organizations of secondary teachers, whether they met alone, or as a special privilege, with college teachers, were discussing whether "which" should precede "tother," whether tweedle dee developed chiefly the cerebrum or the cerebellum, and what was the exact educational value of tweedle dum. Everyone went around, too, with a chip on the shoulder; the classicist and scientist would fight at the drop of the handkerchief, the secondary man was coming to self-consciousness and beginning to wonder whether it was not time those college men had some of the conceit taken out of them, though how to do it was not so clear. There was some sort of an agreement to the effect that things were pretty bad, and that the other fellow had got to be reformed. So each man was valiantly tugging at the mote in his brother's eye, while the beams in all eyes were believed to be found concentrated in the curriculum. Revise the curriculum was then the educational as revise the creed is now the theological watch cry.

THE GOLDEN AGE
SETTLED AND
UNSETTLED

The Golden Age is not altogether upon us as we close the century, but no one can question that there has been a most hopeful change of emphasis in our educational discussions. Some of the questions we were so confident of solving a decade ago have been solved. Those of us who were most horrified at the mere idea of an elective system in a secondary school, have, for the most part, administered such systems ourselves with cheering results. Spite of the immense gain in science teaching in the schools, we have the figures of Dr. Harris to prove to us that the classics have not merely held their own, but actually gained in their relative hold on the schools. Some of us thought the question of the curriculum never could be solved until we had an exact science of educational values. We think so still, if by curriculum is meant an exactly prescribed mental regimen for the average, normal, developing human being. But we have found some difficulties here; for one, the "average child" does not exist; we find all sorts of children, but never a typical, average, normal child; for another, an exact science of educational values seems no nearer attainment now than it was in Aristotle's time. With no "average child" in sight to which to apply our ideal curriculum, no exact science on which to base it, we have rather given up the ideal itself. Indeed, some of our leaders think we have lost ourselves entirely and are trying vainly and pathetically to find out where we are at. There used to be a beginning, a middle, and an end to things. Some studies were universally stamped as common enough for the primary school, others everywhere recognized as so sacred as to belong by the divine right of kingship to the college. But now the alphabet is studied in the college, nay, in the university even, while we give the essence of Froebel's mystical metaphysics to babes in the kindergarten.

Yet are we not without hope. Old things must pass away before all things can become new. That the new will be so very different from the old is yet to be proved. Meanwhile, we are thinking more on whatsoever things are certain and

puzzling less over the hidden mysteries than a decade ago. A striking evidence of this fact is found in the changes in the character of our teachers' organizations. We used to have the Department of Secondary Education in this and that bigger organism, "Associations of College and Preparatory Schools," "High School Principals Associations," and their like, and we have them yet, true enough, but we have in addition "History Teachers Associations," "Classical Conferences," "High School Science Teachers Associations," "Mathematical Conferences" and their like. Then, too, was there not a time when such bodies as the American Historical Association, The American Philological Association, The Modern Language Association of America, counted few, if any secondary teachers in their membership? Only a few years ago the question was broached whether questions of scholarship should not have more place on the programs of teachers associations. Now we have questions of teaching demanding and getting more place and a large place on the programs of scholars' associations. While we are resting a bit in our great work of refurbishing the curriculum, that palladium of our educational slavery, we are employing the leisure thus granted us in learning by heart some great truths which, as like as not, will turn out to be the preamble to the declaration of curriculum-independence. The letter killeth, the spirit giveth life.

To go back to a century ago, there was not a cloud then on the educational horizon. Any one would have believed and everyone would have maintained that the problems of education were non-existent. This is the way, walk ye in it, was the sum of educational science. One of our best known educational leaders who has recently taken up his residence abroad, asserts that all the great lines of educational development are marked out in the United States for the lifetime of one generation, so that a man who wishes to be in on the ground floor of large educational movements must go abroad to get the chance. But all know that the fathers of 1800 knew several things which were not so, and,

THE SHIFTING
EMPHASIS

WHEN
EVERYTHING
IS SETTLED

therefore, we yet hope that the sage of 1900 will see one or two things worth while happen in this country in his generation.

This is the day of the individual; the unit is having its innings, the mass is out in the field. The course of study in the individual subject is the center of attraction, the focus of attention, sharing honors only with the individual student and teacher. We are likely to run to excess in this unit-worship before we are through with it; just now we are apt to speak of correlation with a bit of a smile as though it were a huge joke. But better units will make a better whole when they are properly united as they are sure to be. It may look to some as though our educational chain were just now a heap of disconnected links, but what a hammering and polishing those links are getting!

C. H. THURBER

HIGHER IDEALS IN SECONDARY EDUCATION

I

THE function of secondary schools is distinct in itself and will one day establish its independent right when it has rid itself of the vicious term, and still more vicious idea, college preparation. In the organization and administration of the secondary school there are first to be considered certain technical details, the chief of these are three in number — curriculum, texts, and teaching methods. When these matters have been completely arranged, only the foundation of the true school has been laid. Changing the figure, let us say that it is in the higher ideals of secondary education we are to find the soul and spirit of the school.

I wish to consider first the chief dangers that threaten the higher usefulness of the school. They are three in number.

The first is that the work may become a mere routine of hack work, a mechanical round of stated tasks. There are always certain tendencies in this direction which need to be understood and checked. The student of necessity often fails to see the purpose of his work, the architectural design of the entire structure of his education. To him his work may easily seem an artificial program imposed by the will of those who control — a treadmill made for him. The teacher feels the same tendency for different reasons. A well trained teacher with classes of half grown boys and girls may have his ingenuity taxed by the difficulties he meets in informing listless or dull pupils, but in the contents of his subjects there can be nothing at all commensurate with his mental powers. By training and maturity he is fit to live in a very different range of ideas. He therefore is subject to a constant pressure to let his class work fall to the humdrum level of duties performed, without neglect it is true, but at the same time without heart or enthusiasm. It must be conceded, moreover, if pupils and teachers alike feel this tendency, that there is much in the work of the secondary school

which is a drudgery and a mechanical routine. The task of the school therefore is not simply to counteract a tendency but to create an actual atmosphere of enthusiasm and of spiritual activity which shall vivify and brighten the daily routine of set tasks.

The school here touches, as it touches in all its problems, upon one of the problems of life. If it does its work well in this respect it will be training its boys and girls for the world far more essentially than in any of the courses of its curriculum. In one aspect a large part of life is mechanical and a drudgery; most men live in assigned tasks and in a routine made either by themselves or by others. This is unavoidable in our modern scheme of society. Men must learn, nevertheless, to create for themselves an atmosphere of freedom and of spiritual independence even if their feet are fast to earth. The importance, therefore, of beginning in the school to develop this broader and more lofty tone of thought is self evident.

How shall the school do the work? There are three chief methods by which it is to be accomplished. In the first place a penetrating and tireless enthusiasm must be at work in the school. Such a spirit breeds a like and companion feeling in everyone whom it touches. The teacher feels its invigorating power when he finds it in his students; but the teacher must remember that it is among the solemn duties of his high calling never to fail himself in this respect. If the organization of the school is pervaded with this contagious enthusiasm, all will share in its influence and power. In the second place, as soon as the boy or girl is old enough to study, he is old enough to know why he studies. From time to time therefore, and more than once, he should be told in a plain and simple way what the meaning and value of his education is — told in the same way and in the same terms that teachers tell each other. He should be made to see that his day's work stands on the same basis as that of any man, that it is of value and meaning not in itself but as part of that large whole to which each day contributes its share. In the third place, the teachers in the different departments of the school ought each in turn from time to time to give to the whole body of students simple but carefully prepared and interesting lectures

upon some subject in his own special department. By this the teacher not only accomplishes other things that cannot be considered here, but also interests the students in himself, in his department, and in the work of the department. Since the word interest is the significant part in the result we seek, the value of the system is evident.

The second danger that confronts the school is that it may become a tutoring machine. Many of our public high schools, excellent as they are, are not schools in any true sense, but are merely places where tutoring is carried on upon an elaborate but inexpensive scale. The true school is an organism, every part of which works with every other part. It constitutes a unit of interest and affection in the mind of the pupil. The true school brings to bear upon the student a single powerful influence upon the mind and character, and not a set of various influences of different characters and values. The truth of this principle is felt very strongly with regard to our colleges: it ought to be equally true with regard to our secondary schools.

Perhaps the danger I allude to is not made plain by the mere statement of it, and some explanation is needed. What is meant is that there is always a grave danger that the school may concern itself with merely scholastic matters, ignoring or forgetting the large personal issues which it should share with its students; there is danger that the school may be so loosely organized that the influence of one instructor runs counter to that of another. Many teachers habitually act as if their topics were the only ones of consequence; and indeed it is difficult in any single topic to keep constantly in thought the entire mental constitution of the student.

Now the methods by which the school is to insure itself from this danger and develop the value of an institution in the strong meaning of that term are as follows: In certain important respects there ought to be uniformity of system among the teachers. The student will then have impressed upon his mind the first fundamental principle that all his studies, so called, seek a common end and are part of a large and definitely organized system. In the second place, each teacher should persistently bear in

mind the other school duties of his students; he may do this in a variety of ways, some important and some trivial, but all having an effect upon the mind of the student. He should in his relations with his classes emphasize the fact that he and his work are but part of a large whole. Last, and most important, the school must convince the student by its entire intercourse with him that it is interested in the whole boy or the whole girl, not simply in his mathematical interests or in the mental part of him. This is to be brought about in ways intangible, but no less real. A hearty interest in all that he does, a sincere coöperation with him in his plans and desires when they are right and proper, is sure in the long run to develop in the mind of the boy or girl a feeling and an affection for the school as a whole. It is to be remembered that the activities outside the class room are the ones which determine the strength and vitality of this sentiment.

The third danger which confronts the school is one which has been involved in what has just been said, but it is a matter of so great importance in other respects that more needs to be said concerning it. There is always danger that the school considers its duty done when the boys have left the class room, or when the boy's daily program is completed and the last gong has sounded. It is here that we find the reason for the fact that so few schools have any real hold upon the interests and affections of the boy and girl. The school has an entire and not a partial responsibility—a responsibility which is no doubt shared by parents and others, but which is not to be limited or divided. The statement of the evil states the method by which it is to be met. There is more involved, however, than an active coöperation with the student in all his interests and activities. The school must unite all the life of the boy or girl under one comprehensive rule of sane living and right thinking. There is not one rule for class room and another for athletic field and home. One comprehensive principle governs all, and the boy must learn to take the sportsman's manly enthusiasm into class room and the student's persistence and logic to the athletic field, living everywhere with enthusiasm, unflagging energy, and a high and

gentle courtesy. Some time or other the boy learns to divide his life and to live two existences based upon different principles and conducted according to different rules; one of these is his school life, the other his real or natural life. It is time that Froebel's famous rule is applied to the whole school system. He said: "Come, let us live with our children," and we have tried to apply it to the kindergarten. It is as vitally necessary in the high school and academy. Faithfully followed, it will create a new era of good feeling and true comradeship between those long-descended foes—schoolmaster and schoolboy.

Having considered the chief dangers that confront the school, we now change the point of view somewhat and address ourselves to a brief reflection upon system and methods.

The stimulation and training of boys and girls must proceed through the careful combination of two systems of treatment. Either system unqualified by the other is vicious.

There must in the first place be a system—prescribed duties recurring in a fixed way, and prescribed tasks which are to be performed in a fixed manner. This is the mechanical side of school life, its purely disciplinary aspect. It imposes equal and exact obligations upon all; demands equally from all. It produces sound habits, and strengthens and deepens mental power. Without correction, however, it does not take hold of the real interests and enthusiasm of the student; thus it loses its greatest and most important opportunity.

The corrective of this system is the second method in school conduct. It is the method of personal appeal. It consists of warning, advice, suggestion, entreaty—addressed sometimes to a single student, sometimes to the whole body of students. It seeks to awaken self-respect, stir pride, kindle ambition; it calls upon the reason and the emotions, upon the better virtues and finer instincts of boys and girls. It has the value always possessed by oratory of taking hold upon the enthusiasm and vital interests, and gives the school a grasp upon the will and the heart. The dangerous tendencies of this system are that it shall become weak and ineffective, using entreaty where command is needed, and that it shall consider its duty done with mere talk.

The first method alone makes the school lifeless, the second makes it invertebrate. The first method, unqualified, forfeits for the school the affection of its members; the second forfeits their respect. The true system combines the two into a single well-balanced whole. The law never surrenders, but the personal appeal also never ceases. By this I do not mean constant and fatuous iteration, but a pervading sense in the school that a personal care and interest are at work. It will take many forms besides mere words.

Much of education is well known to lie in admirable methods presented to the mind and attention of the student. No principle is better known, yet it is seldom applied to the school itself as a model of efficiency, precision, and organization. This, however, the best school must be—an actual exemplification of all the virtues it seeks to teach. It is demanded that the student never forgets, never procrastinates, considers all details, masters every emergency. The school has deliberately assumed in this the duties of an organization so complete, so finished, that the student will naturally and inevitably rely upon its absolute excellence and see in it a pattern of the completeness which it teaches.

Thus from every point of view it is plain that the functions of the school are but just begun when its scholastic duties and schoolroom drill are probably completed. In these the boy has come to meet the teacher. In what still remains the teacher must go to meet the boy, for in what I desire now to say I speak of the school life of boys exclusively. All sound conceptions of school duties now include some attention to the sports and athletic interests of students, but it is doubtful whether their full value and educational significance is generally understood. The real boy, the entire boy, is to be found here with all his natural tendencies, good and evil. Even the scholastic virtues of order, system, and, above all, of persistence and industry, are quite as well taught here as in the schoolroom. But beyond this, if a wise control, constant and complete, but friendly and sympathetic, goes into all the sports and games, we will see at once great gains in the higher ranges of morals and manners. Two

things must be remembered with regard to boys and girls both. One is that they demand leadership; the other is that they cannot create their own ideals. The function of the school will be therefore to furnish the needed leadership, to coöperate with all the good leadership that naturally springs up among boys, and erect and strengthen ideals. The better natures among young men at once respond, while it must always be the teacher's duty to shame the meaner spirits into obedience. They will learn to be good natured, courteous, clean, and self-restrained in speech, valuing many things above brute strength and mere victory.

I have alluded to the traditional antagonism between school-master and schoolboy. Of all the virtues of the best schools the greatest is the substitution of a cordial understanding and mutual consideration for this hereditary estrangement. The partial systems of the past are to give way to the new and catholic spirit which will be adequate to all the immense opportunity of the future. We can never go beyond Froebel's law.

FREDERICK WHITTON

MEDIEVAL AND MODERN HISTORY IN THE HIGH SCHOOL¹

SINCE the report of the Madison Conference, history has been the storm-center of educational discussion. This center has at length moved from the field of American to that of European history. This topic is, therefore, a thoroughly life-question. Among the various contributions toward its solution, none is more weighty or valuable than the paper of Professor James Harvey Robinson, published in the Proceedings of the National Herbart Society. While narrower in scope than the epoch making report of the Madison Conference, it is more thorough, more conservative, and more conclusive. In innumerable respects it places every teacher of history and every friend of historical studies under lasting obligations. It is no small service that attention is focused upon the aim and content of historical instruction, to the exclusion of the interminable talk about methods. I would even hazard the suggestion, heretical though it be, that if more teachers would follow his example, in treating students "simply as men and brothers" rather than as psychological specimens, they would secure a response now denied even to the most scientific "methods." A further service is the tacit but none the less emphatic condemnation of the plan proposed by the Madison Conference and since widely recommended whereby general history is made an appendage to French or German history; a condemnation which has come none too soon to save the cause of historical study from lasting injury at the hands of its friends. Either medieval and modern history can be taught in high school, or it cannot. All the arguments urged for the substitution of French or German history amount to an assertion that it cannot. If this really be the case, let us frankly abandon the attempt to teach the history of modern civilization in high school; but in the name of historical fact and pedagogical

¹ Before the National Herbart Society, Chicago, July 1899, in discussion of Professor James Harvey Robinson's paper.

common sense, let us not pretend that this can be done "in connection with French or German history."

The list of defects in existing text-books of European history is not exhaustive—a volume would be required for that—but it includes the most fundamental. Such defects are: the cramming with meaningless names and dates, the emphasis on what is extraordinary and passing rather than on what is typical and permanent, the neglect of causal relations, the projection of latter day moral standards into the past, and the evident lack of scholarship on the part of the authors. Such an exposure of these faults cannot fail to make for their removal. This is especially true of the scourging administered to authors who presume to write texts for the schools without use of the sources or knowledge of books in foreign languages. If someone, speaking with equal authority, would only rise up and scourge the teachers who presume to teach history without a mastery of tongues and use of sources, the day of deserved discredit for history would quickly pass.

The outline of an ideal text-book will seem to the high-school teachers of history like a glimpse of the Promised Land to one weary and fainting in the desert. It is for precisely such a book that the better teachers of history have looked and longed these many years: a book which should be, not an *omnium gatherum* of things to be learned, nor yet of things to be admired or abhorred, but a clear and vigorous account of the salient factors and main stages in modern civilization, treating conditions more fully than persons or events, taking as its motto *Nur die Liebe hat Verständniss*, and leading to a comprehension of modern economic, social, and political institutions: in short, an institutional history based on Bernheim's definition: "Die Geschichte ist die Wissenschaft von der Entwicklung der Menschen in ihrer Bethätigung als sociale Wesen."

The list of topics to be included in such a book contains nothing that could be omitted. Some others might be added, such as the expansion of European civilization and control over the habitable earth. But the chief question which I would like to raise concerns more the order of prominence than the choice

of topics. In accordance with the idealistic tendency which Professor Sloane has declared to be dominant in contemporary historical thinking, the emphasis is laid throughout more on what men have thought than on what they have done. Without desiring to go to the other extreme and maintain the Marxian thesis, I cannot forbear to question the wisdom of this procedure, at least in a book intended for high-school use. Thus, for example, the contention regarding the importance of church history for an understanding of the Middle Ages is doubtless scientifically correct; but the study of theological dogmas in the high school does not seem to me likely to yield results at all commensurate with the time and energy consumed in the process. Moreover, teachers are not generally gifted with tact sufficient to tread the hot ashes of religious disputes without disaster, even supposing the author of the text able to steer his perilous way between Scylla and Charybdis. Finally, since our present interests necessarily determine the perspective of history, that topic should receive most extended treatment which is today of most vital, practical interest. Professor Robinson himself states this principle when he declared "Our interests have so changed that the older works do not contain what we ask, but neglect what to our age and generation seem the essentials." Judged by this criterion, what verdict would have to be passed upon a high-school text which should treat church matters so much in extenso? The burning question of today is the social question—the equitable organization of industry and of society: and any text which is to "contain what we ask" must lay emphasis throughout, not on the thoughts and beliefs of men, but on their economic and social condition. So far, therefore, from relegating economic topics to a subordinate position, I am firmly of the opinion, both on theoretical grounds and by reason of my experience as a teacher, that medieval and modern European history will never be rendered intelligible to high-school pupils until it is based on economic categories. To ignore, as is usually done, the development of the economic unit, the transition from a natural through a money to a credit economy, and the social and political effects of increasing division of labor, is to offer the play of Hamlet with Hamlet left out.

EDWARD VAN DYKE ROBINSON

ST. PAUL, MINN.

ROUTINE WORK IN MATHEMATICS

IN the announcement of courses in mathematics, prepared by the Mathematical Department of Cornell University, we find the following statement:

Of the preparatory work in mathematics two things are especially demanded.

1. That it shall have developed in the student a certain degree of mathematical maturity, and familiarized him with the subject-matter and methods of mathematical work.

2. That it shall have furnished him with those specific facts, an accurate and ready knowledge of which is indispensable in the further prosecution of professional study.

It seems to be the consensus of opinion among the majority of teachers of freshman mathematics in college or university, that in the case of a large number of students that enter college, these demands are not fulfilled. The same is in all probability true also of those students who do not go beyond the high school. Undoubtedly a number of causes combine to bring about this state of affairs. Of these, three deserve special mention. First, the subject of mathematics is still, in too many instances, taught by teachers who have not had sufficient special training in the subject. Secondly, the mathematical curriculum is not yet sufficiently systematized (*from the kindergarten to college*); for example, too much time is spent on arithmetic, while geometry and algebra are deferred too long. Thirdly, in most text-books on mathematics, as well as in the teaching, the emphasis is not placed where it should be. It is this third point that I wish to discuss, although it is connected with the first two. This fact, that the emphasis is not properly placed, causes much of the routine work which characterizes so much of the mathematical teaching of the day, even far beyond the high school.

Routine work manifests itself chiefly in two ways. First, in the attempt to build up the subject of mathematics from the beginning as a beautiful logical edifice, where each theorem shall

have its definite fixed niche from which it cannot be moved. There comes a time in the mathematical development of the student when this absolutely scientific and logical method should receive an emphasis. But if we do this at too early a day, the result is very likely to be that we shall obtain only purely formal and routine work from the student. In the second instance, routine work reveals itself in a false appreciation and use of the formulae of mathematics. These two phases by no means exhaust the subject, which is too large to be exhaustively treated in a paper of this extent; I will, however, confine myself chiefly to them.

Let us see how the first of them works out in teaching geometry. It has been my experience, which I have had amply corroborated, that in teaching geometry we proceed very much as follows.

The book begins by giving several pages of definitions, and we religiously wade through the entire set without any regard as to whether we are going to need them five or forty-five pages later. We conscientiously see to it that our students apparently understand these definitions, and we then go on to take up a set of theorems on straight lines, pass on to parallel lines, triangles, quadrilaterals and so on through the first book. We insist upon it that the student understands his proofs, and every step in each proof. We use every precaution that he shall not memorize, and even work many of the originals, and when we are through we flatter ourselves that our students know at least this much geometry. Then we go on to the next book and so on through plane geometry. Finally comes the examination and the usual per cent. of students pass in the course. They are now labeled as knowing their plane geometry. But how long does this knowledge stick? A few months pass and a large number of those, who received their credit in geometry, seem to have forgotten the greater part of all they ever knew of the subject. A brief examination of the manner in which many students who have studied geometry attack a theorem, will, I believe, throw light on their attitude toward the subject and reveal to us one weakness in the ordinary method of presentation. Given then

a theorem, whose proof was once known, and in all probability the student will at first make an effort to recall to his mind the proof in the form in which he once studied it. If he does not succeed in this, he may go on and make an attempt to recall some other theorem that seems related to the given theorem, by means of which he may be able to obtain the desired proof, and in case he fails here, he will "give it up." This attitude of mind reveals very clearly that the student never had much more than a mere routine knowledge of geometry. He has not gained the analytical power he should. He has very frequently not learned first to analyze the theorem and to find out what is given and *everything* that is given. And even if he has done this he has not learned to analyze the statement to be proved, that is to say, he has not learned to recognize upon what simple truths the conclusion hinges. For example, in a theorem on proportion, the thing to be proved may depend directly upon the equality of certain two lines in the figure. The student should be able to recognize such a fact as this and then should know how to go to work to prove two lines equal.

There has been a movement in late years to obtain the above results by the heuristic method of teaching geometry, that is to say, by the method of having the student work out his own proofs with the aid of the teacher, where necessary. Undoubtedly this method has its value, especially where the conditions are favorable for its application, but if the ordinary text-books written along this line are used, it seems as if we should have nearly as much routine work as we now have. I base my statement on the fact that in almost all the texts which I have examined, the individual theorem is the unit; that is to say, each theorem is supposed to be studied with reference to its position in the logical chain. It has its definite place from which it must not be removed without danger of destroying the whole logical sequence. This I cannot consider the chief end and aim of *elementary* geometry, and I am perfectly aware that by many, such a statement will be considered rank heresy. It seems to me rather that the prime object of elementary geometry should be to teach certain well-defined broad geometrical principles. Here then is where the emphasis belongs.

Let me make my contention clearer by a single illustration. It is a well-known fact that in their ultimate analysis a very large number of theorems depend upon proving the equality of certain lines or angles. It is therefore of the greatest importance to know how to prove lines or angles equal. The first general method is that of superposition, but its very nature prevents a widespread application. Of more general usefulness is the method by congruent triangles and on account of its utility this should be introduced as early as possible. Then give numerous applications of this, until the student is thoroughly conversant with it. Later we will meet with other theorems by means of which we can prove the equality of lines and angles. These should in every case be emphasized and their usefulness be demonstrated by numerous examples. After having mastered a comparatively small number of such principles the student will have the power of himself proving an astonishingly large number of the theorems that are in the ordinary books, and the comparatively few theorems that do not fall under any of the leading principles would then not offer any serious difficulty. We shall indeed have mutilated that beautiful logical chain, whose links are the individual theorems. But this is of interest only to the more advanced student of pure mathematics. On the other hand, the student will have certain definite principles which he knows how to apply, and which will be of the greatest value to him in his future needs. We shall also have secured a greater economy of time and energy, and above all we shall have raised the subject above the dead level of routine work and shall have infused life and vitality into it. The student will see the why and wherefore of things, he will not be obliged to depend so much on his memory, but will work with a greater degree of intelligence and will begin to enter into the true spirit of geometry, instead of being swamped in its formalism.

I have devoted so much space to the subject of elementary geometry, because it stands apart from those branches of mathematics into which symbols and formulae so largely enter. To the latter group belong the more elementary branches, algebra, trigonometry, and analytical geometry. I shall not

attempt to discuss these individually, but shall choose illustrations from one or the other, as may best suit my purposes.

Probably every teacher of freshman mathematics in college or university has noticed a peculiar if not reckless use of symbols and formulae on the part of many of his new students. Such feats as writing $(a + b)^2 = a^2 + b^2$ are of frequent occurrence. Then as the work progresses in algebra or trigonometry another fact soon stands out, namely, the tendency on the part of the student to reduce everything to a formula. He has recognized the fact that it is a simple matter to substitute in a formula, and hence in any given problem his first aim is to find a formula that will fit that particular problem and by means of which he can grind out his results like the organ-grinder grinds out his tunes. This tendency on the part of the student is undoubtedly encouraged by many of the text-books on algebra, trigonometry, etc. In these texts the formulae are developed and then stated in the form of a rule, which is followed by a set of examples on the application of the formula. In nearly all of the older works these examples are, to a considerable extent, simply exercises in substituting in the formula in question, and hence they are routine in character and of little value. Finally, the teacher very frequently fosters the tendency to purely formal work. It is such an easy matter to teach the student how to substitute in a formula, and even in the case of duller students results of a certain kind can be thus obtained, that a teacher will unconsciously fall into the habit of doing the work in this way. This is not in any way restricted to the work in the secondary school, as the following incident will show. Some years ago I happened into a class in analytical geometry while the final examination was in progress. The questions had been placed on the board, and on reading them I was astonished to note that every one of them could be solved by straightforward substitution in some formula. Not a single question among the lot was planned to reveal the students' actual knowledge of their subject, but each and all simply went to prove the students' power of remembering formulae and substituting in them. The teacher, without any doubt, was thoroughly conscientious, and felt well pleased

with the apparently good results he had obtained. This attitude, both of the teacher and the student, toward formulae is deplorable and will, to a considerable extent, thwart the aims of mathematical teaching. Many a promising student has thus been led into the swamp of extreme formalism and lost to mathematics.

What are mathematical symbols and formulae, and how can we secure all the benefits to be derived from their use, without running into the danger of doing work that is purely formal and routine? These are questions upon whose correct answer very much depends.

In the first place, the symbols and formulae of mathematics are not an end in themselves, but only a means to an end. This fact need not be further emphasized, for it is evident that, if we teach formulae as an ultimate end, then the students will naturally soon make use of them in a purely routine way.

The symbols of mathematics are simply signs, chosen in a perfectly arbitrary manner, by means of which we are able to express in a short and concise way statements that would otherwise require a longer and more cumbersome expression. In other words they constitute a labor-saving device, which plays in mathematics a rôle similar to stenography in ordinary language. Each symbol stands for some quantity that is obtained in a certain definite manner, or it stands for some well-defined operation. Here then is where the emphasis should be placed, and the thing for which the symbol stands should be defined and understood *before* the symbol itself is given. We do this in primary arithmetic, for we introduce actual numbers and have the children work with them before we give them the symbols that stand for the numbers, that is the numerals. This is the correct method and it should be extended into the work in algebra. For example, in dealing with a product of like factors as a , a , a , a , it would be preferable, for a time at least, to use this longer expression, and later point out that we will gain both in brevity and in power if we replace this by the short symbol a^4 . In this way the content of the symbol, rather than the symbol itself, will become the prominent thing in the mind of the

student. At present this is not always the case, which is shown by the fact that so many students look upon a symbol as something mysterious, something that should be labeled "handle with care." They are not always conscious that this is their mental attitude. Another fact that indicates the same thing is their inclination to assign to the symbol *a priori* existence. As an illustration, practically every beginner will think that the symbol a^0 has in itself some *a priori* meaning and that we can *prove* that it is equal to unity. They do not realize that as a symbol it has absolutely no meaning, until we assign such a meaning to it, and that we *define* $a^0 = 1$ simply and solely for the reason that, if we do so, all the laws that govern positive integral exponents will also hold in this case. Unless we carefully guard against it, the student will fall into bad habits of thought and will work in a purely routine and mechanical manner instead of with intelligence.

All that has been said of symbols holds also in the case of formulae. Every formula is only a symbolic expression of some *theorem*, which can just as well be expressed in the vernacular. Both formulae and symbols possess, in addition to their brevity, the advantage of constituting a universal language, that is, by means of them we are able to express mathematical facts in a form that can be understood by mathematicians the world over. But formulae serve another purpose aside from those mentioned. They are, namely, a powerful tool for obtaining results. This side has always received an emphasis, perhaps indeed an over-emphasis. We are anxious to get at the application of the formula, to show what can be done with it, and therefore do not spend sufficient time upon the fundamental truths embodied in the formula. We are satisfied to prove the formula in a purely formal way and then rush on to applications. The result is, that in the student's mind the formula stands out in a strong light and not the truth it embodies. Take, for example, the very simple formula, $(a + b)^2 = a^2 + 2ab + b^2$. We prove it by direct formal multiplication, give some examples and let it go at that. Hence it happens that even very good students quite frequently make mistakes in using it. They think of the particular

formula, rather than of the general truth. If, in this particular instance, we should start in a different way we could bring out the general truth first. The student knows that the letters of algebra stand for any magnitudes. Without at all referring to the formula, we might begin by constructing the square on the the sum of two lines and show that it breaks up into the sum of two squares and two rectangles. Here then is a fact which the student readily grasps. Then proceed to see how this truth may be expressed in algebraic language. This gives us our formula, and now as a last step we give the formal proof of the formula so that we know it will hold in general for any quantities and not merely for lines. By proceeding in some such way as this, we shall reduce to a minimum the danger of purely formal and routine work. It is not within the limits of this discussion to go through the whole of algebra in this way. We can, however, do this and thus present the subject in such a way that it shall contain a minimum of routine work. The result will be that the student will attack his problems with intelligence, instead of trying to work them like so many Chinese puzzles. He will begin to see more clearly what mathematics stand for and will derive a much greater benefit from his work, both as regards mental development and as regards the accumulation of mathematical facts.

There is one subject that at first sight seems to have little to do with the matter under discussion, but which is of some importance in this connection. I refer to the correlation of the different branches of mathematics. Not one of them stands apart and by itself but they are all to a greater or less extent related. Thus we have it in our power to illustrate geometrically nearly all the facts of algebra. If this were done and the dualism brought out, we should have very much less routine work than we have at present. The value of geometrical illustrations in all non-geometric mathematical work cannot be overestimated. I believe, therefore, that the geometric training of the child cannot begin too soon. Let me quote from the current Harvard catalogue :

Geometric education should begin in the Kindergarten or primary school, where the child should acquire familiarity through the senses with simple geometric forms, by inspecting, drawing, modeling and measuring them, and

noting their more obvious relations. This study should be followed, in the grammar school, by systematic instruction in Concrete (or Observational) Geometry, of which geometric drawing should form a part. Such instruction should include the main parts of Plane and Solid Geometry, treated as a matter of observation, and not as exercises in logical deductions, without, however, necessarily excluding the beginnings of deductive proof, as soon as the pupil is ready for them. Concrete Geometry is believed to have important educational value, and to prepare an excellent foundation for the later study of Formal Geometry.

If the subject were thus studied then we should not only secure less routine work in our formal geometry but would also be able to use it to a much greater extent in our algebraic work.

I have not attempted in any way to exhaust my subjects within the limits of this short article. All I have had in mind has been to touch upon some of the phases of routine work in mathematics, and thus, if possible, to provoke discussion, study, and thought along this line.

HENRY L. COAR

UNIVERSITY OF ILLINOIS

SUGGESTIONS FOR TEACHERS OF ELEMENTARY LATIN

THE daily recitation work of Elementary Latin may be classified under the heads of inflection, syntax, vocabulary, Latin into English, and English into Latin exercises. If the teacher is everywhere calling for inflections, or attempting review work at every point, the hour expires with much of the advance neglected. The following suggestions are given to prevent any such waste, and to assist in emphasizing the right thing only in the right place.

I. *Inflection*.—Before the recitation place the paradigm upon the board, clearly indicating the *stem*, *terminations*, and *quantity* of long vowels (likewise *syllables* and *accent* during the first few weeks). In addition, *euphonic changes* may be shown—du (c + s) = dux, mili (t) + s = miles, leo (n) + — = leo, scri (b + s) + *erā* + *mus* = scripserāmus—but do not make this matter prominent until presenting the third declension. (*Have pupils come into the class with books closed.*) At the beginning of the recitation, one pupil may give the stem and terminations; a second, state the laws of euphony; and a third, rules affecting the pronunciation. (*Erase paradigm.*) To insure a correct pronunciation, let the teacher inflect the paradigm first. Some of the brightest pupils may then follow suit. We say brightest, for, aside from the teacher's influence, bad examples of enunciation and accent often become contagious among pupils. When the paradigm has been mastered, have similar words inflected, but only a few. Close attention will be secured if these latter pupils are sometimes stopped in the midst, and another required to complete. Many such halts can be called in the declension of *bonus*, or in the full conjugation of *amo*.

II. *Syntax*.—In presenting Latin syntax, much of the teacher's success depends upon his ability to ally English and Latin constructions. For convenience in comparison, the latter may be divided into three classes: (1) constructions evidently like

the English, (2) constructions whose corresponding English is not always apparent to the pupil, and (3) those idiomatic. Beware of passing hastily over the first—they come early in the year and are the timbers upon which all others are laid. Many a boy has prematurely dropped Latin because the subject and object were still enveloped in a mist. Predicate nominatives and predicate adjectives are also too little understood. The following illustrate the second: dear to his country, full of water, contented with little, electing him president, asking them their opinion, walked ten miles, traveled three months, he is older than I (am), and he likes Latin better than (*he likes*) Greek. If the Latin construction is idiomatic, strip the stranger of his disguise and make him at home, at least as much so as possible. There are two chimneys *to that house* (Dat. of Pos.); or, *That house* has two chimneys (Nom. of Pos.); and again, The two chimneys *of that house* are in sight (Gen. of Pos.). We have just observed that comparatives *with than*, in English, are followed by the same case as precedes. Do we ever omit our *quam*? Yes; more (than *quam*), but not *quam* alone. That English verbs sometimes agree with their subjects in person as well as number is apparent in the case of the verb to be (am, art, is, are, was, were); note also the personal endings in such words as *dost* and *doeth*. Similarly the auxiliaries *will*, *may*, *is*, etc., may be considered tense, mode, and voice signs. While the position of English adjectives renders their inflection unnecessary, that position is quite variable: they often follow their nouns for emphasis or euphony, and become far separated when predicate; and in poetry the position of all words is flexible. Does anything in the mother tongue correspond to the use of *Ne*, *Nonne*, and *Num*? *Veniesne*, Will you come? *Nonne venies*, You'll come, *won't you*? *Num venies*, You'll not come, *will you*? These strangers, if properly introduced, generally become the pupil's best friends. Besides the illustrations given by the teacher, the class may volunteer others. The constructions made clear in English, require a short Latin sentence illustrating the same syntax, and finally call for a statement of the rule. When several constructions of the same case have

been met, as the ablatives of means, manner, agency, etc., compare and discriminate.

III. *Vocabulary*.—Here is an opportunity for alert work. Do not require the pupils to rise. Give the English, asking for the Latin. Select the English word representing the primary signification of the Latin, and firmly establish this meaning in the pupils' minds (this should appear first in the printed vocabulary); other English equivalents may be recited by the class. In the case of nouns, require the Nom., Gen., and gender (occasionally, also, certain cases with their stems, terminations, and laws of euphony); in the case of adjectives, the Nom. Sing. of all genders; and in the case of verbs, the principal parts, noting any compounds; in addition require a *derivative* with each. Sometimes, however, begin with the Latin word and call for the English. This is advisable with prepositions, where the case or cases that follow must be learned. Note related words and discriminate synonyms. Do not let the recitation of the vocabulary be fragmentary; the pupil should give the Nom., Gen., gender and derivative in one answer. Call for few or no inflections.

IV. *Shorter Latin into English and English into Latin Exercises*.—The books are still closed and the work is oral. This exercise gives the pupil a firmer grasp of the paradigm. Suppose the lesson is considering the indicative active of *rego*—thirty-six forms; eighteen words in each exercise will illustrate the entire paradigm. In the first part the teacher gives the Latin, requiring the English, and in the second, vice versa. If the pupils are responsive, allow voluntary answers, without rising.

V. *Longer Latin into English Exercise*.—(Books are here opened.) (1) The Latin should be read *in the original* with the correct *pronunciation* (terminations, especially clear-cut) with a proper *grouping* and a suitable *inflection*; the first of these requirements, though, will demand most of the pupil's attention during the early lessons. Let what is principal be made prominent, and what is dependent, duly subordinated; group adjectives, genitives and adjective phrases with their nouns, and likewise, so far as possible, adverbial elements with their verbs; indicate

emphatic words and suggest antitheses—in short, let the original be read, like its English equivalent, in a manner to reveal the thought. The teacher may often lead the way by first reading the entire exercise himself, while at other times he may follow the learner. Occasionally, moreover, have the class review the original on the following day. (2) Translate into idiomatic English, but the pupil must always be able to translate literally, and this should be required when the sentence is quite idiomatic. (3) Syntax. Note especially the new constructions and inflections in the exercise, giving them fullest consideration in the first few sentences; inflect, however, but few words. Occasionally a pertinent question of syntax, formation or position may precede the translation—sometimes the initial attack is at the idiom. Of the questions that follow the translation, most should be directed to correct any mistakes the pupil's recitation has just revealed.

While the opportunities for studying sentence-structure in the early stages of Latin are limited, very much can be accomplished, especially during the last term. To understand the complexity of *Gallia est omnis*, etc., one must begin with the structure of simple sentences. In the adjectives and adverbs of simple sentences we find the embryo of a complex growth: when these cannot sufficiently or conveniently limit their nouns or verbs, phrases are used; and when these latter fail, clauses. Is this word, phrase, or clause an adjective or adverb in force, and what does it limit, are pertinent questions. Teach Latin beginners to locate the spinal column the first year, and they will cease to find so many dismembered limbs and scattered bones the second.

VI. *Longer English into Latin Exercise.*—This may receive written preparation before class time. For recitation, send the pupils to the board, but without books or papers, requiring them, except in the case of a long or involved sentence, to remember the English from the text. It is advisable for them to write the English sentence upon the board, but the foremost will often dispense with this. When, as often happens, the number of pupils is double the number of sentences, each can be written twice. By sending the slower portion of the class first, you

will enable them to complete their work as soon as the brighter pupils; but in correcting, reverse, thus affording the former a better opportunity for detecting their mistakes. In a position to correct the work and command the class, ask for criticisms, giving preference to the pupil whose work is under consideration. Errors of position can be indicated by arrow lines, and incorrect terminations revised. In this way each pupil has corrected all the sentences, perhaps twice. This and the preceding exercise may also be taken orally; this is an economical way when the time is limited, and bright classes enjoy it.

The papers brought into the class may be left at the pupil's recitation seats. During the first of the year the teacher can be of much service by carefully correcting this work and returning it; later, critical attention can be given only to those that need such assistance most.

HERBERT L. WILBUR

TEACHERS COLLEGE
New York City

LITERARY STUDY AND CHARACTER FORMATION

THE method by which teachers of literature most commonly and most naturally go to work to form character is the extremely primitive scheme of direct preaching. Too many of us are never happy unless we are pointing a moral. We din a sort of hot-house goodness into the ears of the boys and girls until they long, though perhaps they are not aware of it and would indigantly and sincerely deny it, to exchange

the lilies and languors of virtue
For the roses and raptures of vice.

Some of us, if I may so speak, would try to get ethical blood out of a moral turnip; we find in a piece of blasphemous impiety like Byron's *Vision of Judgment* a new apocalypse, and in a simple little story like the *Great Stone Face* a system of conduct so beautiful and so complete that we cannot speak of it without tears, to say nothing of those which we cause other people to shed. All this, I am free to admit, is calculated to produce a powerful effect; unfortunately, however, it does not always result as is intended or desired. If the teacher is operating on what is vulgarly known as the goody-goody boy or a sedate and pious miss the ethical dainty is received and consumed with grateful decorum. But if the subject is unregenerate or is even full of high spirits and inclined, as all healthy-minded young people are, to think habitually about far other things than moral principles, spiritual nausea is pretty sure to follow. The proverbial wildness and frivolity of the minister's children are familiar illustrations of the truth of these statements. In other words, formal ethical instruction, where moral improvement is not needed, is mildly innocuous; where moral improvement is desirable, in nine cases out of ten it is positively detrimental.

Something very much like this is observable in all those cases in which men try to influence other men. Shakspeare knew

it when he made Brutus' speech fail and Antony's succeed. Pope knew it when he wrote:

Men must be taught as if you taught them not.

The operation of the principle, in fact, is not confined to the subjective world. The oculist, in seeking to lead a recalcitrant muscle back into the paths of virtue, does not restrain its vagaries; he humors them.

The reasons for these things are to be sought and found deep in the structure of the human mind. There are two sets of mental phenomena to which they are directly traceable; first, the inter-relation of the conscious mind and the subconscious mind; second, the consequent relation, as regards cause and effect, of the mental and moral activities.

The conscious mind is the instrument which performs all purely intellectual operations. It perceives, it wills, it reasons. The subconscious mind possesses none of these faculties. Its one channel of communication with the outer world is the conscious mind. As regards the present it is, in a sense, in bondage; as regards the past, however, it is free. It never forgets; that is to say, the impressions that it receives are ineffaceable. Its make-up depends upon the whole past history of the individual. To this make-up obviously are due all whims, prejudices, and tastes. We are accustomed to refer to these conventionally as emotions, but as a matter of fact they are nothing more or less than crystallized perceptions, judgments, and decisions. The sum total of these components of the subconscious mind constitute what we call character. The old statement that character is what a man *is*, is not therefore strictly true; character rather is all that a man has thought, willed, and seen.

If this reasoning be sound, it follows that fineness of feeling and hence fineness of morals depend on fineness of intellect. Common experience attests the truth of this conclusion. It is impossible to conceive of an all-wise Being who is not also all-good. In so far as any man is a criminal, just in so far is he a fool. Stupidity leads to other consequences than immorality, but all immorality is the result of stupidity. The way to eradicate sin, therefore, is to eradicate stupidity. In other words, the

scientific method of forming character is to increase the size and the quality of the brain.

This idea should permeate and saturate every recitation in literature. From the first to the last it ought to be in the teacher's mind. There is no portion of the work which cannot be made to assist in the cumulative result. The student should be taught to see things accurately and independently; to speak and write accurately and independently, and to judge books accurately and independently. Accuracy and independence: these are the great words. No man who acts habitually in accordance with the principles for which they stand can be weak; his tastes cannot go astray; he must hate the false and love the true; he will see life steadily and see it whole.

As I have already said, this work must begin with the foundation. The moral importance of insisting on absolute accuracy in the mechanical details of composition, which is an essential part of the study of literature and ought never to be separated from it, cannot be overestimated. There is a school of pedagogues, I am aware, and it is not without disciples, who would reverse the good and safe old rule: Take care of the pence and the pounds will take care of themselves. I have heard a man who stands high in educational responsibility gravely maintain that, if a student put in a dash whenever there was a break in his thought, the reasonable requirements of punctuation would be satisfied. I told him that, if some of my students put in a dash wherever there was a break in their thoughts, their compositions would be nothing but a succession of dashes. If a man is a slipshod speller it is because he is a slipshod thinker, and if he is a slipshod thinker he is sure to act from half understood and hence inadequate moral ideals. By conscious and persistent effort there can be created in the student a state of mind such that if he misspells a word or misplaces a comma, he will be as unhappy as a full back who misses a tackle or a center fielder who muffs a fly. He should be taught that dereliction in these respects is to the intellectual what soiled linen is to the social status. If he is not so taught there will be no foundation for the future upbuilding of his character through the medium of literary study.

The first thing that I should try to teach, after reasonable progress had been made in these mechanical matters, would be accuracy of observation in regard to nature, men, and books. I would have the boys and girls, at an early point in the high-school course read some composition like John Burroughs' *Sharp Eyes*, the chief purpose of that work being to open their senses to the great mass of common things about them which they and we and all people are too apt to look at without seeing. From the observation of things I would pass to the observation of men, taking as a starting point some such book as *Silas Marner*, in which character and motives are clearly and keenly analyzed. I would end these exercises in observation with a critical examination of some masterpiece, probably the *Merchant of Venice*, endeavoring to give my pupils a sound and definite standard by which to weigh its merit, and so establishing in them the habit of judging a book not by what is written about it but by what is written in it. Sometimes I think that if I were a literary Czar I would issue an ukase commanding all books about books to be burned, with a corollary providing that anyone who should in the future write a work of literary criticism should be hanged. In short, I would try to clear the minds of my pupils of cant—cant about nature, cant about people, cant about books. I would place them under the influence of the splendid simplicity and straight forwardness of Burns, Macaulay's glorious candor, and the piercing east wind of Carlyle's stern moral vigor. In such atmospheres spiritual malaria cannot exist.

Macaulay, too, is useful for another reason. If there is one vice from which he is free and to which high-school pupils are addicted, it is the vice of saying one thing and meaning another. I have here a collection of statements taken at different times from their compositions:

Each particular hair did stand on end, like a fretful porcupine.

Each knotted and combined lock did part.

Horatio had been to college, from which we may believe he had an income.

While at college his father died.

He began life when twenty-two years old.

Coriolanus opens on a welfare in Rome.

He was buried in thought on the banks of the river.
Boswell's Johnson includes many antidotes of his life.
Whenever worsted in argument he resorted to logic.
A Queen would not hang her two husbands in the same room.
Twelfth Night was written between 1599 and 1600.

There were no cannon in Hamlet's day. Shakspeare is, therefore, guilty of an anachronism when he makes Hamlet exclaim :

O that the Everlasting had not fix'd
His canon 'gainst self slaughter.

A person who is capable of making mistakes of this sort cannot in any large sense of the word be called moral. He can see neither the humor nor the equity of things. You may preach to him till doomsday. You may weep and abuse. You may tell him in a hundred thousand ways to say what he means and mean what he says. The probability is that after all this, he will write as badly as before. A thorough study of one of Macaulay's essays will do more to make him despise looseness of language and of logic than all the precepts in the rhetorics. His precision

Has such a face and such a mien
As to be lov'd needs only to be seen.

He is the greatest of all awakeners of an enthusiasm for clear, exact, polished, manly utterance.

The salutary influence of good examples, indeed, can scarcely be overestimated. Man is essentially an imitative animal. We all try to be what we admire. For these reasons good biography is calculated often to perform for the young student a service which it would be vain to expect from any other kind of literature. Many a writer has conceived a noble ideal, cherished throughout years of earnest and successful toil, from a perusal of Boswell's Johnson. Many a self-made man has caught his first impulse from the pages of Franklin's autobiography. Many a soldier, who has risen high above his fellows, can trace the inception of the resolve that led him onward and upward to the inspiration that he drank in from the old Plutarch with the battered cover. The government at Washington used to furnish every officer and every man in the American navy with a copy of Southey's Life of Nelson. Example is greater than precept.

Lives of great men all remind us we can make our lives sublime. If we sow in the mind of a young man or a young woman the seed of a noble example, and do not water the ground too much, the summer, we may rest assured, will bring forth flowers and the autumn fruit and grain.

I have reserved until the last the discussion of the most important and far reaching consideration of all—the formation of taste. Good taste is the highest of all moral qualities and for this reason the cultivation of it should constitute the ultimate aim of education. The man who is good because he likes to be good is better than the man who is good because he thinks he ought to be good. If Willie abstains from Sunday baseball because it grieves mother when he indulges in it, he is apt, when mother is out of town, to fall from grace; but if he abstains because the evil smells and the bad language make him sick, he will never backslide. If our pupils read Shakspeare instead of Archibald Clavering Gunter because we tell them that Hamlet is better than Mr. Barnes of New York, we have doubtless scored a point; if they stick to Shakspeare long enough they will be convinced that we tell the truth. The "if," however, is too large. The impelling force must come from within. How can we create in our pupils such a frame of mind that they would rather read Milton and Burke than Josh Billings and Artemus Ward?

The achievement is no easy one. There are several popular ways of not accomplishing it. The teacher who adopts the method of minute linguistic study and the teacher who adopts the diametrically opposite method of sentimental gushing are generally unsuccessful. Both fail for the same reason. Neither makes the student understand. Here we have a precious truth. Dislike is merely a form of ignorance. People cannot help worshipping merit when they actually realize that it is merit. If you can lead your pupils to see even imperfectly what good literature is, if you can open their eyes to one tenth of the beauty, the power, the significance of it all, you need not worry much about their liking it. And in proportion as they like it, their morals will be safe. They will be so busy helping David Copperfield run away from Mr. Murdstone's bottling works that

they will have less time to smoke cigarettes with Tom. The fascination of the great game that Julius Cæsar played in Gaul will dim the joy of surreptitious poker with Dick. Even those seductive coon songs that Harry sings so well will lose some of their charm when the moan of doves in immemorial elms and murmur of innumerable bees have caused subtler fibers in their souls to vibrate.

The conclusion from all of these facts is simple and irresistible. There must be no such thing as moral instruction as such. Whatever enlarges, refines, and strengthens the brain is powerful and salutary in the formation of character. The only scientific way to teach ethics is to turn the white light of truth on the relations of things. The idea that bad men are usually sharper than good men is worse than absurd—it is wicked. We have too many words. Their multiplicity frequently makes us see things double and triple. Sin is nothing but a form of insanity. The criminal is just a kind of fool. Stupidity and immorality are one. The highest wisdom lies in being good.

If these ideas ever come to prevail in education I do not predict that the world will be regenerated in a decade; but I honestly believe that they are sound, useful, and susceptible of application in actual pedagogical work. Indeed, as far as I can see, they must lie at the base of all thorough and truly scientific effort toward character formation.

EDWIN L. MILLER

ENGLEWOOD HIGH SCHOOL
Chicago

GEOMETRY, MATHEMATICS IN SECONDARY SCHOOLS.¹

THE study of algebra is interesting, and the results are very gratifying to the teacher, but the most interesting work in secondary mathematics is the work in geometry.

Here we can actually see the development of the class if it has received proper treatment, but with improper care and formal recitation, the results may be very different. Instead of wide-awake faces always on the *qui vive* and constantly on the lookout for new truth, you may find a listless, monotonous conduct that will dampen the ardor of a most enthusiastic teacher. But pupils generally take on some of the qualities and characteristics of their teachers. Fortunate the class which has an instructor with enough life to sometimes get beyond the time-beaten paths of the formal recitation, and who is ready to ask more of the pupil than a reproduction of the demonstrations that have been handed down to us through twenty-five centuries.

Present indications point to a radical departure from the old plan of having the pupil "ride his pony" through the demonstrations of our present text-books.

The demand is for a book that will require the pupil to do some thinking on his own account. A book that will be to the pupil a guide in the more difficult work, suggesting the steps in the proof by questions rather than giving the entire demonstrations as nearly all of our books now do.

At least one book has been arranged on this plan, but while it is a great step in the right direction it is very liberal with its helps.

Under such a method the study of geometry, with a consecrated teacher, would give to the pupil much of that discipline which is usually attributed to it, but which is too often lost in the formal memory work of the old plan.

¹ Portion of a paper on "Mathematics in Secondary Schools."

Yet with the books we have, much can be done by the teacher toward correcting or rather avoiding the faults and difficulties arising from their use. Greatest care should be taken in the study of the definitions, as they are usually collected on the first few pages of the text. While the language given is better than any the pupil might use, and they cover the case better than the pupil would do it even after he understands the meaning of the definition given, it is well for him to give in his own language what seems to him to cover the case, and let the teacher point out the faults if there be any, thus teaching the value of words used and the great care necessary in giving expression to mathematical ideas. Time thus used is never wasted. We can well afford to spend plenty of time talking with our classes about these same definitions, explaining away the difficulties before we require our pupils to memorize them.

One glaring instance in my own experience always comes before me when I am working on the geometric definitions.

The definition for a "construction" as I was required to learn it, was "a graphical representation of a geometric conception." It meant nothing to me. I well remember how I was always afraid of that word "construction," and some others that were almost as bad, because we had no explanation. A lack of understanding here makes it hard sledding throughout the entire year.

The definitions, axioms, theorems, and corollaries must be learned and learned well, but the pupil should never be required to memorize them until he understands the meaning so well that they present to his mind a mental picture with all of the details, and it is the teacher's business to see that he has such understanding.

We should not be afraid of explanation, especially at the very beginning of the work. Take the concrete case and work to the general.

We must not pay too much attention to some of our teachers of pedagogy who say that it is a poor teacher and a poor class that has to resort to the concrete case. The general will follow the particular, and the pupil will learn to generalize

only after he understands the particular cases that go to make up a part of the general case.

The first ten weeks necessarily means most careful work on the part of the teacher; watch the pupil closely and do not think that because he does not ask questions he understands. We must teach him to ask questions. Get it out of his head that he is to impress you with his knowledge of the matter at hand; rather teach him to impress you with a frank, investigating nature. Make him understand that it is not necessary to work for marks, as the marks are capable of looking out for themselves if he has the proper spirit. Complaint is continually made that pupils insist on memorizing the demonstrations given in the book. May not the teacher sometimes be at fault here? Does the pupil know how to study? Have we been careful enough in showing him the proper plan of attack? Early in the year do we not sometimes insist that the pupil shall learn the proofs well in order that he may be able to apply the principles to later work? Have we studied the first few theorems with the pupils or have we left them to struggle for themselves?

Some of the pupils will not know *how* or *what* to do unless they have the help of the teacher. Some of them will invariably commit to memory the work done in the book. We should not criticise them too harshly, because that is probably the only kind of studying they have been taught to do. It is better for the class to study the first few theorems and demonstrations in the recitation period, under the direction of the teacher, and the teacher should take some time each day for sight work on the advance lesson.

A few well chosen questions will sometimes do the pupil more real good than an hour of hard study.

The first thing to be done is to get a perfectly clear understanding of the theorem, analyze it, and know just what is required, and how much may be taken as the basis for work. If the pupil then fails to see the method of proof, let him assume the truth of the conclusion, and examine the relations back to the hypothesis. The class will soon get the idea of what the work in geometry means, and some of the better minds will be

attempting the solution of theorems as exercises, and will show decidedly more interest in a page of exercises than in the regular propositions.

Another plan that will add strength and power of imagination, is the demonstration of theorems without a figure to look at. Besides giving them power to picture conditions in the mind, it teaches them to concentrate their thought, and they will be able to talk intelligently on an exercise or problem without the aid of pencil and paper.

When a boy or girl fifteen years of age sits down, and referring only to a mental picture, describes the process of determining the position of a point, or of finding the locus of a point under given conditions, and is able to see the exception, if there be one, that boy or girl will be no weakling in mathematics. The tendency to memorize will certainly give way to such training.

The careless manner in which some teachers pass over the subject of *loci* is to be lamented and condemned. It seems sometimes as if it were a case of "blind leading the blind." No one principle in geometry is more interesting or more valuable, and nothing does more toward eliminating the question of chance in our work in originals. Some teachers do not touch it at all. Some merely draw a figure and tell the class that it is true, for anybody with eyes can see it.

Again some pupils get the idea that the locus of a point is entirely independent of the conditions in the case, and whenever the term locus is met with *it is a perpendicular to a line at its middle point*. How much of mathematical value in such teaching? It takes time and numerous exercises showing the almost unlimited number of cases arising, each under its own conditions, to impress the pupil with the true meaning of the *locus of a point*. But it is worth all the time it takes, for when the pupil begins his exercises in construction he has the one instrument that insures his success.

And what shall we do with the originals, as they are called? Work them; they are the flesh and blood that give beauty and life to the framework of geometry. Work all that time will

possibly permit. The class that is well grounded in the theorems and demonstrations, in axioms and definitions, that has had some sight work and work from mental pictures, will handle originals in such a way as to bring joy to the heart of the teacher.

How shall the pupil approach the original exercise? By the natural method, Plato's method, the method that has been used for more than two thousand years. Approach it as the scientist approaches his problem, assume the conditions as true, and go back over the ground and see if you can find a chain of relations that will lead to the proof of the assumption. Give a bright boy the task of finding the locus of a point under given conditions. He will construct one, two, or three points; he sees, perhaps, that it is not a straight line, he assumes that it is a curve, and as he knows only one curve, he will try to prove his assumption, that the locus is the circumference of a given circle. It is the natural method.

The teacher must always be critical if he wishes to find the same qualities in his class. He must insist on the use of correct mathematical expressions till they become a part of the pupil. To obtain the best results, the recitation should be an informal discussion, and that is possible only when the teacher gets so close to the pupil that perfect frankness exists between them, and each enjoys the confidence and respect of the other. Then the teacher's presence will stimulate free discussion rather than reserve, and the pupil will be ready to uphold his opinions against those of the teacher in such a way as to carry conviction with his argument. Both teacher and pupil must feel that they have no right to make a statement to the class that they cannot prove. The "omnipresent why" should never be allowed to escape the pupil's attention.

What shall we do to keep our pupils from *wandering* in their demonstrations? Insist on their knowing their destination and their route. Most wandering arises from a lack of care in studying or analyzing the theorem. They do not know the hypothesis and conclusion sufficiently well to trace a line of thought from one to the other, even though they may see certain relations.

The teacher should not forget to teach the history of mathematics along with the theory. The interest of the class may be greatly increased if he will tell them some historical fact or anecdote along with the solution of the problem. Call the attention of the class to the beauty of the theorems that form the groundwork of geometry, especially to such as "The sum of the three angles of a triangle is equal to two right angles," and "The square on the hypotenuse of a right triangle is equal to the sum of the squares on the other two sides."

Tell the pupils of the discovery of such principles; show them how the Egyptians 3400 years ago used three pegs and a rope to show the relation of the sides and hypotenuse, and thus constructed the right angle; show them the mistake of these same Egyptians in computing the areas of parallelograms and trapezoids; tell them that Thales, five centuries B. C., discovered that every angle inscribed in a semicircle is a right angle, and that the sum of the three angles of a triangle is equal to two right angles.

It will interest them to know that Plato went to Egypt and studied mathematics and was so deeply interested that he had placed over his door the following inscription: "Let no one who is unacquainted with geometry enter here." Tell them Euclid's answer to the first Ptolemy, 300 B. C., when Ptolemy asked if there was no easier way to learn geometry than by studying the elements as prepared by Euclid; Euclid answered: "There is no royal road to geometry." Tell them that Euclid's elements with some additions has been used as a text-book for more than two thousand years.

They will listen closely to the story of the life and death of Archimedes at Syracuse. Tell them how nearly he approximated the value of π , and how since his time "circle squarers" by the score have wasted their energies. These incidents and others of the same sort, told when the class is studying some of the related theorems will add much to their interest in the work.

I once read a list of answers to questions relative to reforms in teaching mathematics. One said: "Get teachers who know more." We would better add to this, *and know better how to*

teach. The work in our secondary schools must not only give the pupils preparation for college, but must give to that large class who go no farther, the best possible preparation for life's duties; but to me, the mathematics for these two classes in secondary schools does not need to be differentiated. What is best in preparation for college mathematics is the best training the mind can get for an active business career. We may not need *limits* and *loci* in business, but the mind that has been concentrated on these principles in school is better fitted for concentration on public works and corporation law.

The twofold purpose of the school should be kept constantly in mind, and whatever work is done, should be done with such a degree of accuracy in mathematical thought and expression that the training the pupil gets will noticeably affect his work in other lines.

While accuracy of expression and careful reading are necessary in algebraic solutions and formulæ, geometry has the greater effect in ordering the mind of the pupil. No other secondary study pursued for one year will give such correct habits of thought and such careful use of words. This same accuracy of expression may cling to the individual throughout his whole life. The pupils study should give him both a proper basis on which to build his future work in mathematics, and the power of ready help in the everyday questions of life.

It should also give him a taste for proper argument, founded on fact and substantiated at every turn by unassailable proofs. Yet to my mind the greatest good to be derived from the study is the "ethical good;" it should teach him the law of order; it should give him integrity of purpose and the power of concentration; it should give him careful, yes, honest expression for all his ideas; it should give him the ability to analyze the questions of life, and separate the good from the bad, the vital from the accompaniments, and to recognize and use the best means at hand for his own good, and happiness.

All these things should be kept constantly in mind by the teacher, and on every possible occasion he should impress them upon his pupils. In other words, humanize the science of mathematics.

• B. FRANK BROWN

LAKE VIEW HIGH SCHOOL,
Chicago, Ill.

BOOK REVIEWS

Longman's Illustrated First Latin Reading Book and Grammar. By H. R. HEATLEY, M.A. Longman's, Green, & Co., New York, 1899.

THE Latin text, collected from many sources, is rather difficult for those who are just beginning to translate. The first twenty lessons have an interlinear translation, from which words which have already occurred are omitted. There is an abundance of illustrations, some of which are very helpful in giving an idea of various antiquities, while others have to be interpreted in the light of the text, and possess little merit, archæological or artistic. If any system has been consistently followed in marking the few long vowels whose quantity is indicated, it is certainly beyond the reach of the average mind to comprehend and apply it. The "grammar" is quite incomplete, having nothing on pronunciation, quantity of vowels, accent, and similar subjects.

FRANK A. GALLUP

COLGATE ACADEMY
Hamilton, N. Y.

New Higher Algebra. By WEBSTER WELLS, S.B. D. C. Heath & Co., Boston, 1899. Price, \$1.32.

THIS *New Higher Algebra* stands in about the same relation to the *Essentials of Algebra* that his *Higher Algebra* does to the academic. The author has simply strengthened the *Essentials* by the addition of more advanced topics.

The simple and logical presentation of the fundamental laws and principles, exemplified by numerous well chosen exercises, followed by the generally thorough discussion of factoring, fractions, equations, and exponents entitles the book to most careful consideration.

The work in factoring might be somewhat strengthened by the discussion of expressions of the form $ax^2 + bx + c$, a form frequently found in the solution of quadratics, and oftentimes most easily solved by factoring.

The problems under factoring, fractions, simultaneous equations, and radicals are plentiful and well suited to the application of the principles involved, but the number of easy drill problems in the early part of the work does not seem great enough to meet the needs of the average beginner.

One of the pleasing features of the book arises from the fact that the author has avoided the *padding process* in making up the list of problems. The full discussion of the more advanced topics, as the binomial theorem, combinations and permutations, the summation of series, and continued fractions, makes it a text well suited for use in the very best secondary schools, and furnishes a preparation that will meet the maximum requirements for entrance in the best colleges and technical schools.

B. FRANK BROWN

LAKE VIEW HIGH SCHOOL
Chicago, Ill.

A History of the Michigan State Normal School, 1849-1899. By DANIEL PUTNAM, A.M., LL.D., Professor of Psychology and Pedagogy. Pp. 368. The author: Ypsilanti, Mich., 1900. Price, \$1.10.

It is difficult to write a history of an educational institution which will have enough specific information to be interesting to the graduates, and yet have enough general information to hold the attention of students of general educational history. Professor Putnam says that the main purpose of his work is to show the development of normal work and instruction during the life of the school, and this he has done in such a simple, attractive manner that there is interest even in much of the statistics. It is written by one who has first-hand knowledge of the facts and a deep interest in the work of the school, as he has been connected with its history for thirty years. An interesting introduction on the evolution of the normal school idea is followed by the history of the beginnings in Michigan, inspired by the great founder of education in that state, J. D. Pierce, the first state superintendent of public instruction. This is succeeded by chapters dealing with the early growth of the school, the development of the courses of study and instruction, its internal administration, the development of the training school, biographical sketches of the leading teachers who have been, or are now, connected with the school, a list of past and present students, and some twenty-nine excellent illustrations. Thus,

while it relates to Michigan particularly, it is valuable to the student of education in this country because of the great influence which the educational system of that state has had in molding the education of the West. We welcome such contributions to the history of education in our country.

GEORGE HERBERT LOCKE

THE UNIVERSITY OF CHICAGO

NOTES

GEORGE HERBERT LOCKE

THE University of New Brunswick in Canada is celebrating its centennial this year.

THE Sanitary Institute of London, Eng., holds examinations in Practical Hygiene for School Teachers.

THE American Institute of Instruction is to invade Canada this year to hold its annual meeting from July 7 to 12, at Halifax, N. S.

A VERY interesting and appreciative account of the life and work of Joseph Lancaster appears in the February number of the *Educational Record* of London, Eng.

THE *International Monthly* announces the early publication of an article which will interest our constituency, *The School and the Modern Home*, by Professor Paul H. Hanus, of Harvard.

PROFESSOR W. A. ADAMS, of Dartmouth College, has in press, to be issued soon by D. C. Heath & Co., publishers, Boston, Keller's *Romeo und Julia auf dem Dorfe*, which is regarded as one of the best of the distinguished writer's short stories.

THE March number of the *Child-Study Monthly* had a very suggestive article on "Common Diseases of Children," by Harriet Brockway. The editor dealt with some aberrations of school supervision in his characteristically incisive manner.

THE physical laboratory of the Lehigh University of South Bethlehem, Pa., which was recently destroyed by fire, is being rebuilt, and will be ready for occupancy, fully equipped in the departments of physics and electrical engineering, at the opening of the college year in September.

D. C. HEATH & CO., publishers, Boston, have in press for immediate issue Valdés's *José*, a Spanish novel of far more than ordinary interest, which has been edited, with introduction and notes for intermediate reading, by Professor F. J. A. Davidson, of the Leland Stanford Junior University.

THE Department of the Training College for Teachers in Secondary Schools in connection with Cambridge University, England, reports that in the past year it had five students in the Michaelmas Term, five in the Lent Term, and six in the Easter Term. Mr. S. S. F. Fletcher, of King's College, is the master.

EX-PRESIDENT CLEVELAND'S two addresses on the "Independence of the Executive" at Princeton, April 9 and 10, will be notable contributions to political literature. They will appear in authoritative form only in the June and July issues of the *Atlantic Monthly*, fully copyrighted by Houghton, Mifflin & Co.

LORD BALFOUR'S Education Bill plainly points to the establishing of great technical colleges in populous centers and higher schools in sparsely inhabited rural districts. This bill, providing for the much-needed extension and encouragement of higher education, is meeting with decided approbation in educational circles.

THAT the short story has a place in literature Ginn & Company propose to prove by such a volume as *Contes et Saynètes* a collection of eighteen short stories from well-known French novelists. These are edited by Dr. Colin, of Bryn Mawr, with notes and vocabulary, and the volume of one hundred and sixty pages is published at seventy-five cents.

WE read much of art in education, but it is a relief to see art in the publications issuing from departments of public instruction. The Wisconsin *Arbor and Bard Day Annual* is the most artistic production that has reached us, and the contents are on an intellectual equality with the artistic cover. It reflects great credit upon Mr. L. D. Harvey, the state superintendent.

THE select and common councils of Philadelphia have passed resolutions directing the mayor and the city solicitor to prepare drafts of an act for the Pennsylvania legislature providing for the abolition of the board of education in the first school district of Pennsylvania and the creating of a department of education. Excessive demands upon the public purse is the reason given for this action.

HARVARD UNIVERSITY has agreed to give instruction during the summer of this year to a considerable number of teachers in the schools of Cuba. Although this instruction is to be given in Cambridge during the session of the Summer School the work is not to be done in that school, but under separate direction and by instructors especially chosen for that task. Memorial Hall will be opened for the use of the greater part of the Cuban teachers.

AN inspiring book for the thoughtful teacher who may be looking for suggestive material for moral lessons is *The Reward of Prince Cheerfulness* by Ruth Lewinsohn and published by W. R. Jenkins, New York. In this tale there is an attempt to portray by personification traits of character such as cheerfulness, temper, patience, etc., their cause and effect upon one another. It is beautifully bound and illustrated and is published at seventy-five cents.

THE Werner Book Company has included in its Great American series the educators of this land, and it is a well-merited tribute that Dr. Winship pays them in his very interesting book called *Great American Educators*. The history of the struggles of these noble men and women to advance the cause

of education in our country ought to prove inspiring reading to the children in our schools today who are enjoying such great privileges. It is published at fifty cents.

THE Teachers College is now a professional school of Columbia University on the same basis as the Law School. President Low is president *ex officio* of the college, but the actual government will remain in the hands of Dean Russell, who is so well known to our readers by his contributions to this journal. The dean has a seat in the university council, and when the faculty of the college increases to ten full professors there will be an additional representative.

STORIES of the Northmen have always had a great fascination for children, and the mythology of that land has a peculiar educational value. The American Book Company has taken advantage of this and has issued a book called *Old Norse Stories*, by Sarah Powers Bradish, in which these tales are retold in such an interesting and animated style that it will be a very useful addition to the supplementary reading in the schoolroom. There are 240 pages, and the price is forty-five cents.

SOME educational gatherings in May are: Western Drawing Teachers' Association at Grand Rapids, Mich., May 9-11, Caroline M. Neile, secretary; New England Association of School Superintendents at Boston, May 11, R. D. McKeen, Haverhill, Mass., secretary; New Jersey Association for the Study of Children and Youth at Newark, May 12, F. E. Spaulding, Passaic, N. J., secretary; Eastern Art Teachers' Association, Boston, May 24-29, Solon P. Davis, Hartford, Conn., secretary.

THE local general committee in charge of the preparations for the National Educational Association in Charleston, S. C., in July next, has appointed a special committee on exhibits of school work. The chairman requests all who may desire to make exhibits of student or pupil work to communicate with him by letter, stating the character of the exhibit they desire to make and the amount of wall, table, or floor space required. Address Mr. Asbury Coward, Chairman of Committee on School Exhibits, Charleston, S. C.

MR. FOSTER WATSON, Professor of the Theory and Practice of Education in the University College of Wales, is contributing a series of articles to the *School World* on "Pioneers in Education." Students of the history of education, especially of that part relating to England, are much in debt to Mr. Watson for his exceptionally strong interest in this phase of educational work, and these articles now appearing are characterized by the felicity of expression and aptness of illustration which appeal to the teacher-at-work who is looking for inspiration.

In an article in the *Journal of Education* on "The Lot of the Assistant Master in English Secondary Schools," the author's last sentence is pathetic:

"The world is full of talk on education, its defects, its methods, its importance, and the changes to be made in secondary education. Meanwhile the position of masters (other than the heads) in many of these schools is painful and precarious to such a degree that many of them, seeing no hope for themselves, use such breath and influence as they possess in trying to save their pupils from the pit into which they themselves have fallen—the pitiful pit of teaching."

MR. JOHN ADAMS, of Glasgow, who is known in this country through that sparkling work, *Herbartian Psychology Applied to Education*, is reported as having delivered a very able address in Aberdeen on "Mental Backgrounds," in which he said: "Show me the man who can put himself in the place of another, see things from the other's background, and I will show you an excellent teacher. The man who sells more silk in a draper's shop than another is a practical psychologist. The teacher who is able to inject himself into another is the man who proves the really good teacher. We cannot all do that, but we may be able to make some sort of a picture to find what is going on in the minds of our pupils, find the background they have, and then act accordingly."

At the Washington meeting in 1898 of the Secondary Department of the National Educational Association, a paper on the study of English, including an outline of a course of study, was presented by Mr. W. F. Webster, Principal of the East Side High School at Minneapolis, Minn. This paper was received with so much favor that Mr. Webster was led to develop the ideas contained in it into a book with the title *English for Secondary Schools* which will soon be published by Houghton, Mifflin & Co.

The College Entrance Requirements Committee of the National Educational Association recommends in the report made by it at Los Angeles in July 1899 a course of study of which it says: "The main points are in accordance with the paper presented by Mr. Webster at Washington."

MR. C. H. MORSS, the superintendent of schools in Medford, Mass., has always some interesting features in his annual report. Last year there was an excellently planned course of study in history, through all the thirteen grades, prepared by Mr. Cushing, the teacher of that subject in the high school and supervisor in the lower grades. In the report of 1900 just received, Mr. Morss announces that the high-school course of study has been so reorganized that the only *required* work is English, including composition and declamation, but to graduate, a student must present, in addition to the above, a minimum of four credits in mathematics, five credits in science, and three credits in history. Pupils preparing for college must take a five-year course, beginning, however, in the ninth grade. This new plan differs from the old in making the work elective by subjects instead of by courses.

THE Executive Committee of the National Educational Association has issued its second official bulletin in connection with the Charleston meeting.

In this bulletin are discussed such interesting items as the following: The aims of the association in selecting Charleston; the great variety of optional routes; the privilege of circuitous routes for return; the low rates for all routes; the opportunities for side trips, especially by sea; the stop-over privileges, and the privilege of stopping until September 1 at Washington, D. C.; the local attractions at Charleston; the official temperature records, showing that comfortable weather may be expected at Charleston, and that other causes than latitude determine the summer temperature of a seaport city; programs of the general sessions and the seventeen departments, making over fifty separate sessions each with a program of important papers, altogether including over two hundred speakers; the expectation that President McKinley will address the convention. All who are interested in this great meeting will find it to their advantage to write for copies of the bulletin to Mr. Irwin Shepard, Secretary, Winona, Minn.

TRAINING is not merely or even primarily the study of logic and psychology; still less is it the study of the metaphysics, which are the only sound philosophical basis of psychology. It would be well for us if we were all trained psychologists, well practiced in the metaphysics of the schools, and, as teachers should be the most accomplished men and women available, no doubt they would make most profit of such studies. But for the perfectly satisfactory discharge of school duties, we can dispense entirely with metaphysics, and we can make use of psychology, ethics, physiology, and history without involving ourselves very deeply in the more recondite parts of those branches of investigation. It is not easy to say exactly where the interest of the teacher in such studies begins and ends; but it may be frankly admitted that if a young aspirant is ever to get to work, or a practitioner to discharge his daily tasks, he must be content to leave a good deal to the professional student of psychology, of ethics, of physiology, and of history; to take much from them as granted, and to interest himself mainly in the points of contact of the several sciences involved as they affect his day's task.—P. A. BARNETT in *Educational Review*, London, Eng.

THE elective system of studies for colleges was the chief topic of interest at the recent annual conference of Catholic Colleges of the United States held in this city. Professor James A. Burns and Professor Cavanaugh, of Notre Dame University, argued for the elective system, and in the course of his address Mr. Burns said: "The elective system will go far, I believe, towards checking the terrible drain of our best blood and brains to non-Catholic institutions." The opposition was exceedingly strong and was voiced by Father Brosnahan, of Woodstock College, who read a paper on "The Relative Merits of Courses in Catholic and non-Catholic Colleges for Baccalaureate." In this he examined critically the differences between Harvard College and Boston College.

At a public meeting in the evening Mgr. Conaty spoke on "A Plea for the College Teacher." He said that the whole question of collegiate success

would seem to hinge upon the teacher, the dry wood of form counting for little with one who has the teaching spirit and is equipped for his work. He dwelt upon the power and influence for good of the teacher and paid a tribute to the devotion and scholarship of the men who have laid the foundation of the present Catholic educational system.

PROFESSOR DE GARMO, president of the National Herbart Society, has issued a circular in connection with the proposed reorganization of the society in which he announces that the publication of the next Yearbook will probably be postponed until thorough organization is effected. The following are some of the features under consideration:

1. Purpose: The Scientific Study of Education.
2. Active Membership: A relatively small number of active members, who shall elect the officers and conduct the business of the society. The chief qualification for active membership shall be the possession of time, ability, and inclination to undertake serious scientific study of educational problems.
3. Associate Membership: A large number of associate members, organized whenever practicable into study clubs, who, upon the payment of a small annual fee, shall be entitled to receive the publications of the society and to attend all its meetings.
4. Publications: The publications in Yearbooks and Supplements, of the result of scientific study by the active and associate members, when approved by a committee on publication appointed by the active members.
5. Self-Election to Active Membership: An arrangement whereby an associate member may become an active member when there is a vacancy by tendering to the society for publication a dissertation showing adequate study of some problem in education.

PROFESSOR MÜNSTERBERG's attitude towards the training of teachers and his opinion of the value of the study of education and psychology to the teacher are too well known to need comment, but he has gone still more widely into criticism in an article on "School Reform" in the *May Atlantic*. He compares our system of schooling with that of Germany much to our disadvantage (in his opinion). The following extract on elective studies may show the trend of his argument:

"Are elective studies really elected at all? I mean, do they really represent the deeper desires and demands of the individual, or do they not simply express the cumulation of a hundred chance influences? I have intentionally lingered on the story of my shifting interests in my boyhood; it is more or less the story of every half-way intelligent boy or girl. A little bit of a talent, a petty caprice favored by accident, a contagious craze or fad, a chance demand for something of which scarcely the outside is known—all these whirr and buzz in every boyhood; but to follow such superficial moods would mean dissolution of all organized life, and education would be an empty

word. Election which is more than a chance grasping presupposes first of all acquaintance with the object of our choice. Even in the college two thirds of the elections are haphazard, controlled by accidental motives; election of courses demands a wide view and broad knowledge of the whole field. The lower the level on which the choice goes on, the more external and misleading are the motives which direct it. A helter-skelter chase of the unknown is no election. If a man who does not know French goes into a restaurant where the bill of fare is given in the French language, and points to one and to another line, not knowing whether his order was fish or roast or pudding, the waiter will bring him a meal, but we cannot say that he has 'elected his courses.'"

THE NATIONAL EDUCATIONAL ASSOCIATION makes the following announcement in regard to prize essays on School Hygiene:

At the meeting of the Department of Superintendence of the National Educational Association at Chattanooga, Tenn., in 1898, a committee of nine members, with Hon. W. T. Harris, Commissioner of Education, as chairman, was appointed to propose a plan for prosecuting a scientific inquiry for the determination of the factors involved in the proper seating, lighting, heating, and ventilating of school buildings. That committee made a preliminary report at the Columbus meeting of the department in February 1899. The report was also presented to the National Council of Education at the Los Angeles meeting of the Association in July.

In accordance with the recommendation of the report, the Council appointed a committee consisting of A. R. Taylor, President State Normal School, Emporia, Kan.; W. T. Harris, United States Commissioner of Education, Washington, D. C.; George P. Brown, Editor *School and Home*, Bloomington, Ill.; W. F. King, President Cornell College, Mt. Vernon, Iowa, and Aaron Gove, Superintendent City Schools, Denver, Colo., to ask the Board of Directors of the general association for the sum of \$1200 to be offered to experts for prize essays on the subjects named, and, if the amount should be granted, to make formal propositions for the same.

The allowance was made, and the committee offer the following prizes, subject to the conditions hereinafter named:

For the best essay submitted on each of the following topics: the seating, the lighting, the heating, and the ventilating of school buildings, \$200. For the second best essay submitted on each topic, \$100.

Each essay shall be limited to ten thousand words and shall be submitted in printed or typewritten copy without signature, but with name of author enclosed with it in sealed envelope and addressed to the chairman of the committee at Emporia, Kansas. Three copies of each essay shall be submitted. They must be mailed not later than February 1, 1901. The essays and envelopes will be properly numbered for identification and the former forwarded to three experts to be hereafter appointed by this committee.

Each expert will be ignorant of the appointment of the others and their combined judgment shall determine the award. Should no essay on any topic be found worthy of an award and publication, the committee reserve the right to withhold the same.

The committee reserve the exclusive right for the National Educational Association to copyright the prize essays and to publish the same for general distribution.

The committee desire that each essay shall treat each topic independently and be complete in itself, no reference being made to statements contained in another essay. Generalities and speculations are not desired, neither are detailed technical formulæ and demonstrations. Each essay should present concisely and comprehensively the problem to be solved and the scientific principles involved; should discuss briefly the construction of the school building as related to the problem of sanitation in general and to the specific subject of the essay in particular; should describe in detail sufficient for the apprehension of the average teacher the conditions and mechanisms by which the best results may be obtained; should include figures and diagrams illustrating general plan and principles involved; should set forth methods and devices for detecting defects and suggest remedies for the same in buildings already constructed; should give references to a few buildings where the system has been adopted; and should be supplemented by a brief bibliography of standard authorities on the subject discussed and a short list of manufacturers of approved devices and supplies for carrying out the plans advocated by the author.

The essay on ventilation should include full suggestions concerning the use of disinfectants.

Should the awards on two or more essays be made to the same person, he will be permitted to revise and unify the manuscript before publication by the committee.

NEW PUBLICATIONS

- Berg's Complete Timber Test Record. Pamphlet. Chicago: B. S. Wasson & Co.
- Longmans' Advanced Reader. Size $7\frac{1}{4} \times 5$ in.; pp. viii + 278. New York: Longmans, Green & Co.
- Songs of All Lands. By W. S. B. Mathews. Boards, 4to; 157 pp. Price 50 cents. American Book Company.
- The Practical Speller. For Higher Grades. By William C. Jacobs. Size $7\frac{1}{2} \times 5\frac{1}{2}$ in.; pp. v + 132. Ginn & Co.
- Old Norse Stories. By Sarah Powers Bradish. Size, $7\frac{1}{4} \times 5\frac{1}{4}$ in.; pp. 240. New York: American Book Company.
- Renaissance and Modern Art. By W. H. Goodyear. Size $8 \times 5\frac{1}{2}$ in.; pp. xiv + 310. Price \$1. The Macmillan Company.
- The Practical Study of Languages. By Henry Sweet. Size $8 \times 5\frac{1}{2}$ in.; pp. xv + 280. New York: Henry Holt & Co.
- Lessons in Botany. By George Francis Atkinson, Cornell University. Size, $7\frac{1}{2} \times 5$ in.; pp. xv + 365. Henry Holt & Co.
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